

PATENT APPLICATION TRANSMITTAL LETTER

Docket Number (Optional)

385-201

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To the Commissioner of Patents and Trademarks:

Transmitted herewith for filing under 35 U.S.C. 111 and 37 CFR 1.53 is the patent application of

Jimmy Lee Edwards

entitled ELECTRICAL CONNECTION APPARATUS

Enclosed are:

- ☒ 14 pages of written description, claims and abstract.
- ☒ 1 sheets of drawings.
- ☐ an assignment of the invention to _____
- ☒ executed declaration of the inventors.
- ☐ a certified copy of a _____ application.
- ☒ associate power of attorney.
- ☒ a verified statement to establish small entity status under 37 CFR 1.9 and 1.27.
- ☐ information disclosure statement
- ☐ preliminary amendment
- ☐ other: _____

CLAIMS AS FILED

	NUMBER FILED	NUMBER EXTRA	RATE	FEE
BASIC FEE			\$ 770. ⁰⁰	\$ 770. ⁰⁰
TOTAL CLAIMS	18 - 20 =	* 0	x \$.	0.00
INDEPENDENT CLAIMS	3 - 3 =	* 0	x \$.	0.00
MULTIPLE DEPENDENT CLAIM PRESENT			\$ 25	0.00
* NUMBER EXTRA MUST BE ZERO OR LARGER			TOTAL	\$ 770. ⁰⁰
If applicant has small entity status under 37 CFR 1.9 and 1.27, then divide total fee by 2, and enter amount here.			SMALL ENTITY TOTAL	\$ 385. ⁰⁰

- ☒ A check in the amount of \$ 385.⁰⁰ to cover the filing fee is enclosed.
- ☐ The Commissioner is hereby authorized to charge and credit Deposit Account No. _____ as described below. I have enclosed a duplicate copy of this sheet.
- ☐ Charge the amount of \$ _____ as filing fee.
- ☐ Credit any overpayment.
- ☐ Charge any additional filing fees required under 37 CFR 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 CFR 1.18 at the mailing of the Notice of Allowance, pursuant to 37 CFR 1.311(b).

July 1, 1997
Date

Steven R. Scott
Signature

Steven R. Scott (Reg. No. 32,000)

Typed or printed name

949 County Road 217

Address ..

Jacksonville, FL 32234

ELECTRICAL CONNECTION APPARATUS

BACKGROUND

1. Field of the Invention

This instant invention relates to the general field of cables and terminals for automotive type batteries. More specifically, it describes novel designs for cables, battery posts/terminals, and terminal connectors.

2. Prior Art in the Field

Present automotive batteries have terminals that serve as points of connection for electrical cables. These terminals may have side terminals, top terminals and, in an increasing number of cases, both. As is true with most electrical connectors, terminals may also be classified as male or female in configuration. Top terminals are generally "male" and are formed from immovable posts, whereas side terminals are generally "female" and are formed by an indentation adapted to receive a bolt (typically a bolt 1/4 inch in width and 3/8 inches in depth). Due to this difference, the nature of the connectors at the ends of electrical cables also vary depending on whether the cable is to be connected to a top post or to a side terminal. Connectors for a top post are generally formed from a "C" shaped "female" element that fits over the post and is tightened thereon by tightening down on a bolt that extends between (and connects) the two ends of the aforesaid element. Connectors for side terminals are usually formed from a simple perforated disk in combination with an appropriately sized bolt. The aforesaid bolt is placed through the perforation in the disk and screwed

snugly into the side terminal, serving as the "male" element in the connective combination and creating an electrically conductive connection between the cable and the side terminal.

The aforesaid features lead to a basic matching problem: Cables with "female" connectors adapted for connection to a "male" top post cannot normally be used with a "female" side terminal battery and vice versa. The more recent introduction of a battery having both side terminals and top posts provides a partial solution for this problem; however, there is still need for simple means for connecting the more standard "female" cable connectors with "female" side terminals where necessary. Moreover, there is a continuing need for connectors and terminals that are easier to use, and for terminals that are easier to connect to "jumper" cables than those in current use.

SUMMARY AND OBJECTS OF THE INVENTION

The instant invention encompasses a revolutionary new design for cables, terminal connectors and side terminals for automotive batteries. As to cables, it involves the production of cables in which each cable (positive or negative) branches into two ends having two connectors. This allows simultaneous connection to both the top and the side pole having the same polarity on a battery having both top and side poles. As to terminal connectors, it encompasses a unitary design having a terminal/bolt element that can be used for (i) the easy tightening/loosening of a female connector element to/from a top/post terminal while serving simultaneously as an ideal jumper cable connection location, (ii)

easy insertion into and/or removal from a side terminal aperture while serving simultaneously as an ideal jumper cable connection location, and (iii) when inserted in a side terminal aperture, creates a "male" post, allowing connection of standard top terminal post connectors to a side post battery. Moreover, the designs discussed herein are economical in construction, rugged and well adapted for ease of manufacture and use.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a basic split cable design as taught by this invention.

FIG. 2 provides a perspective view of the basic connector element clamp taught by this invention.

FIG. 3 provides a perspective view of the basic connector element bolt taught by this invention.

FIG. 4 provides a top view of the basic connector element bolt taught by this invention.

FIG. 5 provides a top view of an alternative design for a connector element bolt as taught by this invention.

FIG. 6 provides a perspective view of an alternative design for a connector element bolt as taught by this invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As illustrated in FIG. 1, the preferred embodiment of the cable utilized in the instant invention for use with batteries having both top and side terminals would be split so that both the positive cable (denoted generally by arrow 1) and the negative cable (not illustrated) branch into two terminal connector ends--

first connector end 2a and second connector end 2b--for connection to, respectively, the top and side terminals of a battery. The branch location (indicated generally as that portion of the cable 1 in the circle denoted by arrow 3) may be in the form of a "Y" or a "T" or any other convenient configuration for this purpose. The branch location 3 may be advantageously formed utilizing a crimped multi-wire connection, a woven connection, or by other means well known in the art. As is typical in the art, the cable 1 is comprised of a conducting core 1a and an insulating sheath 1b

The first connector end 2a may be fitted with a standard top terminal connector fitting (as known in the art) and the second connector end 2b fitted with a standard side terminal connector 5. However, it is deemed more advantageous to fit at least the first connector end 2a for the top terminal (and preferably both first connector end 2a and second connector end 2b) with a connector element (denoted generally by arrow 4) adapted for use with the novel connector element bolt 6 taught in this invention. This connector element 4 may advantageously take the form of a "C" shaped clamp with a rounded portion 4a and extended tabs 4b having blank perforation 4c and threaded perforation 4d. The perforations 4c and 4d are adapted for insertion and screw tightening of the basic connector element bolt described below with reference to FIGS. 3 and 4. Thus, although both perforation 4c and 4d necessarily have a diameter of approximately 1/4 inch, the connector element bolt is initially inserted through blank perforation 4c, and is next threaded through threaded perforation

4d (which is self tapped), allowing tightening of the connection. (Alternatively, a nut may be welded or otherwise affixed in place of threaded perforation 4d, allowing both perforations to be blank perforations). The extended tabs 4b should be of such length (and the perforations 4c and 4d spaced outwardly from the rounded portion 4a on said extended tabs 4b at such distance) as to allow the enlarged head section 6b of the basic connector element bolt 6b to snugly abut the extended tabs 4b when tightened. For the embodiment illustrated, perforations 4c and 4d would, therefore, need to be spaced outwardly from rounded portions 4a on extended tabs 4b approximately 1/2 inch and spaced upwardly from the base of the battery by approximately 1/2 inch. Supporting braces (not shown) may also be added between curved portion 4a and extended tabs 4b to eliminate folding of the tabs 4b upon tightening.

As illustrated in FIGS. 3 and 4, the basic connector element bolt (denoted by arrow 6) taught by this invention has both (i) a standard screw threaded section 6a at least 3/8 inches in length and 1/4 inches in width (which is adapted to fit into the side terminal of a battery), and (ii) an enlarged head section 6b approximately 3/4 inches in diameter and 3/4 inches in length (which gives it the approximate dimensions of a standard top post for a battery). The head section 6b may advantageously be formed in a standard cylindrical configuration with cylindrical perforations (denoted by arrows 6c) as illustrated in FIGS. 3 and 4. (This embodiment is preferred as it may be utilized to create an "top post" configuration by insertion into a side terminal

aperture as well as being used for the other purposes discussed in this invention). An alternative "winged" configuration is illustrated in FIGS. 5 and 6. The winged configuration is provided with wings 8 and a base disk 9 as well as sharing numerous other features denominated and discussed with reference to the first embodiment described.

Both configurations should ideally be provided with grooves or some other form of texturing (denoted generally by arrow 7) on their outer surface to provide a stronger gripping surface for wrench or pliers and to form a superior conducting contact surface for jumper cable connectors. In both embodiments ease of tightening and loosening is facilitated by the inclusion of cylindrical perforations 6c which serve as means for insertion of a screw driver barrel or other cylindrical tool. (They may, therefore, be tightened and loosened without wrench or pliers, although these may also be used in the alternative if desired). This allows the user, who often has a limited number of tools available, especially in an emergency situation, to loosen or tighten connector element bolt 6 using a screw driver, a nail or almost any other linear tool that can serve as a lever arm and provide mechanical advantage to the user. This feature greatly facilitates the use and removal of the elements illustrated, eliminating many of the major inconveniences associated with current designs. The two embodiments for a connector element bolt 6 shown should, however, be considered as illustrative rather than exhaustive of design possibilities. Numerous shapes may be used

for this purpose, including multi-winged designs.

As previously noted, the threaded section 6a of the connector element bolt 6 is adapted by its size to screw into the side terminal of a standard battery. Thus, connector element bolt 6 is designed to provide a substitute for the bolt typically utilized to fasten the standard side terminal connector 5 thereto, and to provide a shape and features that are (i) more easily tightened/loosened, and (ii) more adapted for connection of jumper cables. Likewise, when used in conjunction with the "C" shaped clamp 4 designed for attachment to the top terminal of a battery, they provide these same features in this role. Finally, when utilized with the preferred dual terminus cable design illustrated in FIG. 1, they constitute a complete and novel system for cables and terminals that offer numerous advantages over the designs in current use. However, as with all inventions, many variations are possible without exceeding the ambit of the inventive concept. Thus, the exact nature of the invention claimed is to be derived from the claims that follow.

CLAIMS

I claim:

1. An electrical connection apparatus for automotive type batteries, comprising:

(a) an electrical cable having one end that branches to form two terminal connection ends; and

(b) terminal connection means located at each of said two terminal connection ends.

2. An electrical connection apparatus for automotive type batteries, as described in claim 1, further comprising at least one bolt element having (i) a cylindrical screw threaded portion adapted for insertion into the side terminal of an automotive battery, the central axis of said cylindrical screw threaded portion defining a first axis, the length of said cylindrical screw threaded portion, as measured along said first axis, being approximately 1/2 inches, and the diameter of said cylindrical screw threaded portion, as measured perpendicular to said first axis, being approximately 1/4 inches, and (ii) an expanded head portion provided with at least one cylindrical perforation, said at least one cylindrical perforation being perpendicular to and intersecting the first axis.

3. An electrical connection apparatus for automotive type batteries, as described in claim 2, wherein said expanded head portion is cylindrically shaped, the central axis of said cylindrical shape defining a second axis, and said second axis is coaxial with the first axis.

4. An electrical connection apparatus for automotive type batteries, as described in claim 2, wherein said expanded head portion is flat, said flat expanded head portion lying in and defining a first plane, and the first axis lies in said first plane.

5. An electrical connection apparatus for automotive type batteries, as described in claim 3, wherein the length of said expanded head portion, as measured along said second axis, is

approximately 3/4 inches, and the width of said expanded head portion, as measured perpendicular to said second axis, is approximately 3/4 inches.

6. An electrical connection apparatus for automotive type
5 batteries, as described in claim 2, wherein at least one of the terminal connection means is comprised of a C shaped clamp, which shape defines two ends, each of said two ends having tabs extending therefrom, one of said tabs having a blank perforation and the other said tab having a screw threaded perforation adapted to
10 receive the screw threaded portion such that the screw threaded portion can first be inserted through the blank perforation, then threaded through the screw threaded perforations, and so serve to draw said tabs together, tightening said C shaped clamp.

7. An electrical connection apparatus for automotive type
15 batteries, as described in claim 3, wherein at least one of the terminal connection means is comprised of a C shaped clamp, which shape defines two ends, each of said two ends having tabs extending therefrom, one of said tabs having a blank perforation and the other said tab having a screw threaded perforation adapted to
20 receive the screw threaded portion such that the screw threaded portion can first be inserted through the blank perforation, then threaded through the screw threaded perforation, and so serve to draw said tabs together, tightening said C shaped clamp.

8. An electrical connection apparatus for automotive type
25 batteries, as described in claim 5, wherein at least one of the terminal connection means is comprised of a C shaped clamp, which

shape defines two ends, each of said two ends having tabs extending therefrom, one of said tabs having a blank perforation and the other said tab having a screw threaded perforation adapted to receive the screw threaded portion such that the screw threaded portion can first be inserted through the blank perforation, then threaded through the screw threaded perforation, and so serve to draw said tabs together, tightening said C shaped clamp.

9. An electrical connection apparatus for automotive type batteries, comprising a bolt element having (i) a cylindrical screw threaded portion adapted for insertion into the side terminal of an automotive battery, the central axis of said cylindrical screw threaded portion defining a first axis, the length of said cylindrical screw threaded portion, as measured along said first axis, being approximately 1/2 inches, and the diameter of said cylindrical screw threaded portion, as measured perpendicular to said first axis, being approximately 1/4 inches, and (ii) an expanded head portion provided with at least one cylindrical perforation, said at least one cylindrical perforation being perpendicular to and intersecting the first axis.

10. An electrical connection apparatus for automotive type batteries, as described in claim 9, wherein said expanded head portion is cylindrically shaped, the central axis of said cylindrical shape defining a second axis, and said second axis is coaxial with the first axis.

11. An electrical connection apparatus for automotive type batteries as described in claim 9, wherein said expanded head

portion is flat, said flat expanded head portion lying in and defining a first plane, and the first axis lies in said first plane.

12. An electrical connection apparatus for automotive type batteries, as described in claim 10, wherein the length of said expanded head portion, as measured along said second axis, is approximately $3/4$ inches, and the width of said expanded head portion, as measured perpendicular to said second axis, is approximately $3/4$ inches.

13. An electrical connection apparatus for automotive type batteries, as described in claim 9, wherein at least one of the terminal connection means is comprised of a C shaped clamp, which shape defines two ends, each of said two ends having tabs extending therefrom, one of said tabs having a blank perforation and the other said tab having a screw threaded perforation adapted to receive the screw threaded portion such that the screw threaded portion can first be inserted through the blank perforation, then threaded through the screw threaded perforation, and so serve to draw said tabs together, tightening said C shaped clamp.

14. An electrical connection apparatus for automotive type batteries, as described in claim 10, wherein at least one of the terminal connection means is comprised of a C shaped clamp, which shape defines two ends, each of said two ends having tabs extending therefrom, one of said tabs having a blank perforation and the other said tab having a screw threaded perforation adapted to receive the screw threaded portion such that the screw threaded

portion can first be inserted through the blank perforation, then threaded through the screw threaded perforation, and so serve to draw said tabs together, tightening said C shaped clamp.

15. An electrical connection apparatus for automotive type
5 batteries, as described in claim 12, wherein at least one of the terminal connection means is comprised of a C shaped clamp, which shape defines two ends, each of said two ends having tabs extending therefrom, one of said tabs having a blank perforation and the other said tab having a screw threaded perforation adapted to
10 receive the screw threaded portion such that the screw threaded portion can first be inserted through the blank perforation, then threaded through the screw threaded perforation, and so serve to draw said tabs together, tightening said C shaped clamp.

16. An electrical connection apparatus for automotive type
15 batteries, comprising a bolt element having (i) a cylindrical screw threaded portion adapted for insertion into the side terminal of an automotive battery, the central axis of said cylindrical screw threaded portion adapted for insertion into the side terminal of an automotive battery, the central axis of said cylindrical screw
20 threaded portion defining a first axis, the length of said cylindrical screw threaded portion, as measured along said first axis, being approximately 1/2 inches, and the diameter of said cylindrical screw threaded portion, as measured perpendicular to said first axis, being approximately 1/4 inches, and (ii) a
25 generally cylindrically shaped head portion, the central axis of said generally cylindrical shape defining a second axis, said

second axis being coaxial with the first axis, with a length, as measured along said second axis of approximately $3/4$ inches, and a width, as measured perpendicular to said second axis, of approximately $3/4$ inches.

5 17. An electrical connection apparatus for automotive type batteries, as described in claim 16, the generally cylindrical shape of said head portion defining two ends, the first end being that adjacent to said cylindrical screw threaded portion and the second end being that distant therefrom, the width of said head portion at the first end being approximately $11/16$ inches and the width of said head portion at the second end being approximately $5/8$ inches.

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20 18. An electrical connection apparatus for automotive type batteries, as described in claim 16, the generally cylindrical shape of said head portion defining two ends, the first end being that adjacent to said cylindrical screw threaded portion and the second end being that distant therefrom, the width of said head portion at the first end being approximately $3/4$ inches and the width of said head portion at the second end being approximately $11/16$ inches.

ABSTRACT

An Electrical Connection Apparatus for automotive batteries having, in its preferred embodiments a multi-purpose screw threaded bolt with an enlarged cylindrical head which can be inserted into the side terminal aperture of a battery to form a terminal post for connection of standard top post cable connector, may be provided with perforations allowing it to be tightened/loosened by any linear object, may be utilized as a tightening bolt for a C clamp type cable connector, and may be utilized in conjunction with branching cables for simultaneous connection to the top and side terminals of dual terminal automotive type batteries.

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled ELECTRICAL CONNECTION APPARATUS, the specification of which

is attached hereto unless the following box is checked:

☐ was filed on _____ as United States Application Number or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

(Number)	(Country)	(Day/Month/Year Filed)

Priority Claimed

☐ Yes ☐ No

☐ Yes ☐ No

☐ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)

(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

STEVEN R. SCOTT

Address all telephone calls to Steven R. Scott at telephone number (904) 289-8761

Address all correspondence to 949 County Road 217
Jacksonville, FL 32234
(Pat. Attn. Reg. No. 32,000)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor (given name, family name) Jimmy Lee Edwards

Inventor's signature Jimmy L. Edwards Date 6-20-97

Residence 4979 SE 171st Lane, DeLia, FL Citizenship U.S.A.

Post Office Address P.O.B. 1599, Silver Springs, FL 34489-1599

Full name of second joint inventor, if any (given name, family name) _____

Second inventor's signature _____ Date _____

Residence _____ Citizenship _____

Post Office Address _____

☐ Additional inventors are being named on separately numbered sheets attached hereto.

Applicant or Patentee: _____ Attorney's
 Serial or Patent No.: _____ Docker No.: _____
 Filed or Issued: _____
 For: _____

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
 STATUS (37 CFR 1.9 (f) and 1.27 (b)) — INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9 (c) for purposes of paying reduced fees under section 41 (a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled ELECTRICAL CONNECTION APPARATUS described in

☒ the specification filed herewith
☐ application serial no. _____, filed _____
☐ patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9 (c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

☒ no such person, concern, or organization
☐ persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME _____
 ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____
 ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____
 ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28 (b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

JIMMY LEE EDWARDS

NAME OF INVENTOR

NAME OF INVENTOR

NAME OF INVENTOR

Signature of Inventor

Signature of Inventor

Signature of Inventor

Date

Date

Date

Fig. 1

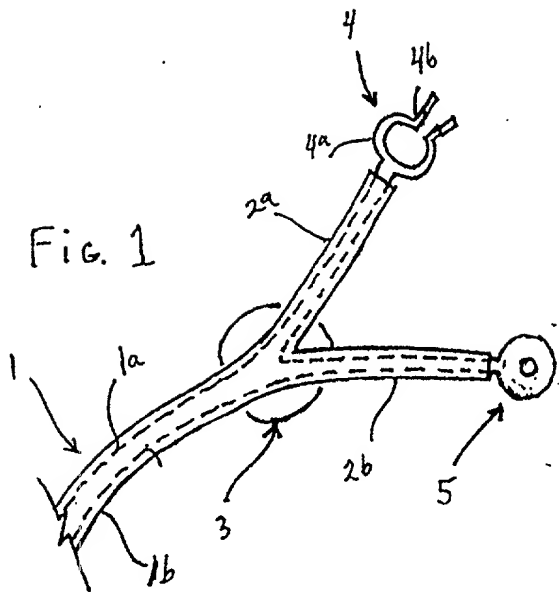


Fig. 2

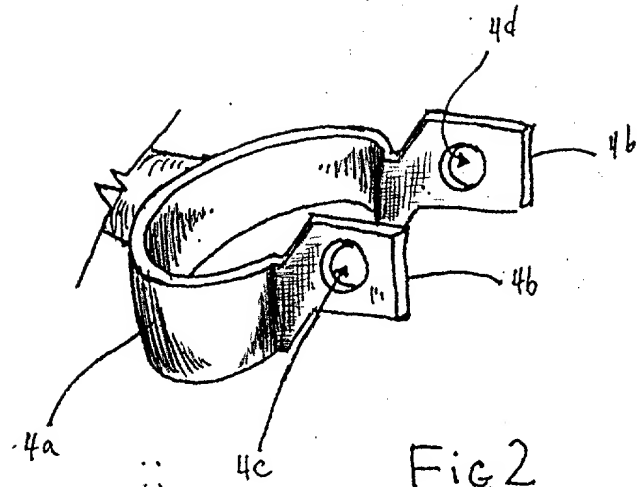


Fig. 3

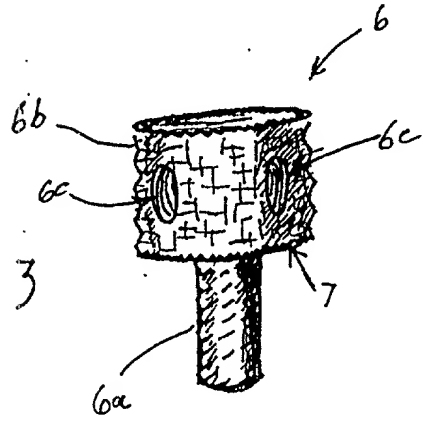


Fig. 4

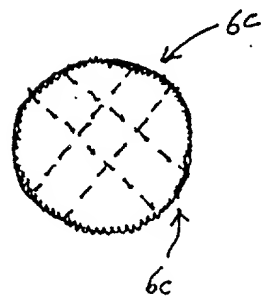


Fig. 5

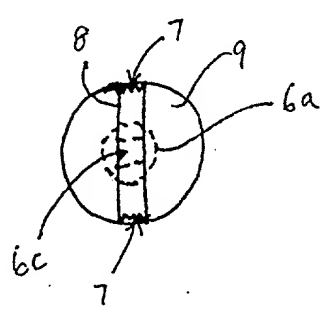


Fig. 6

